
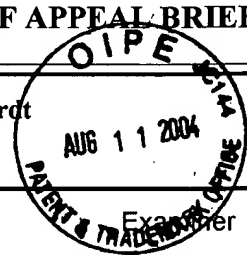
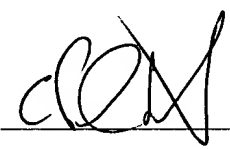
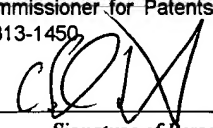


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<b>TRANSMITTAL OF APPEAL BRIEF (Large Entity)</b>				Docket No. <b>LASP:104_US_</b>	
In Re Application Of: <b>Johann Engelhardt</b>					
					
Application No. <b>09/817,646</b>	Filing Date <b>03/26/2001</b>	Examiner <b>Mark A. Robinson</b>	Customer No. <b>24041</b>	Group Art Unit <b>2872</b>	Confirmation No. <b>8779</b>
Invention: <b>METHOD FOR ALIGNING THE OPTICAL BEAM PATH OF A MICROSCOPE, AND MICROSCOPE ASSEMBLAGE</b>					
<u>COMMISSIONER FOR PATENTS:</u>					
Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on					
The fee for filing this Appeal Brief is: <b>\$330.00</b>					
<input checked="" type="checkbox"/> A check in the amount of the fee is enclosed.					
<input type="checkbox"/> The Director has already been authorized to charge fees in this application to a Deposit Account.					
<input checked="" type="checkbox"/> The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. <b>50-0822</b>					
 _____ <i>Signature</i>			Dated: <b>August 9, 2004</b>		
C. Paul Maliszewski, P.E. Registration No. 51,990 Simpson & Simpson, PLLC 5555 Main Street Williamsville, NY 14221-5406 Telephone No. 716-626-1564			<div>I certify that this document and fee is being deposited on     <b>Aug. 9, 2004</b>                      with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.</div> <div> _____ <i>Signature of Person Mailing Correspondence</i></div> <div><b>C. Paul Maliszewski, P.E.</b> _____ <i>Typed or Printed Name of Person Mailing Correspondence</i></div>		
CPM/KRB					
cc:					



Attorney Docket No. LASP:104US  
U.S. Patent Application No. 09/817,646  
Date: August 9, 2004

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: ENGELHARDT, Johann

U.S. Patent Application No. 09/817,646

For: METHOD FOR ALIGNING THE OPTICAL BEAM PATH OF A MICROSCOPE,  
AND MICROSCOPE ASSEMBLAGE

Filed: March 26, 2001

Examiner: Mark A. ROBINSON

Group Art Unit: 2872

Confirmation No.: 8779

Customer No.: 24041

**Certificate of Mailing by First Class Mail**

I certify that this Appeal Brief is being deposited on August 9, 2004 with the U.S. Postal Service as first class mail under 37 C.F.R. §1.8 and is addressed to the Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450.

  
C. Paul Maliszewski

**APPEAL BRIEF**  
(37 CFR 1.192)

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Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Honorable Sir:

Applicant respectfully appeals the decision of the Examiner finally rejecting Claims 1-35 as set forth in the Office Action dated April 20, 2004. A Notice of Appeal was timely filed by Applicant on July 8, 2004.

08/11/2004 KBETEM1 00000054 09817646

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Real Parties in Interest

The real party in interest is LEICA Microsystems Heidelberg GMBH, Assignee of the above application by assignment recorded in the Patent and Trademark Office at Reel 011655, Frame 0455.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

The application originally contained 27 claims. Claims 28-35 have been added by amendment. Claims 1, 4-6, 12, 15, 19-21, 23, and 27-31 have been amended. Claims 1-35 are pending on Appeal.

Status of Amendments

Claims 28-31 were added and Claims 1, 4-6, 12, 19-21, and 27 were amended in a July 29, 2002 reply to a May 29, 2002 Office Action. Claims 32-35 were added and Claims 1, 12, 15, 23, and 27-31 were amended in a February 3, 2003 reply to a November 1, 2002 Office Action. Claims 1 and 12 were amended in a reply to a Final Office Action dated April 16, 2003. The amendment was not entered per an August 8, 2003 Advisory Action. The amendment of April 16, 2003 was entered in an August 15, 2003 RCE. Claims 1, 12, 15, 19, 28, and 30 were amended in a January 27, 2004 reply to an October 27, 2003 Office Action. Claims 2, 3, and 13 were cancelled and Claims 1, 12, 28, and 30 were amended in a May 17, 2004 reply to a Final Office Action dated April 20, 2004. The May 17, 2004 amendment was not entered per a May

28, 2004 Advisory Action. Claims 7 and 19 were cancelled in a June 24, 2004 reply to the April 20, 2004 Final Office Action. A Notice of Appeal was filed on July 8, 2004.

#### Summary of the Invention

The present invention comprises a method for aligning the optical beam path of a microscope having a light source, a microscope optical system, a detection stop, and a detection device. The method provides a center of the detection stop as a first optical reference point and a focus of the light source as a second optical reference point. The entire beam path for the microscope is defined by the two optical reference points. The method carries out an iterative alignment of the light source until the entire beam path is aligned with respect to the two optical reference points, causing the light to precisely strike the detection stop.

#### Issues Presented for Review

1. Whether claims 12-22, 24-27, 30, 31, 34, and 35 are patentable under 35 U.S.C. 103 over U.S. Patent No. 5,035,476 (Ellis) in view of U.S. Patent No. 5,681,987 (Gamble).
2. Whether claims 1-11, 23, 28, 29, 32, and 33 are patentable under 35 U.S.C. 103 over U.S. Patent No. 5,035,476 (Ellis) in view of U.S. Patent No. 5,681,987 (Gamble) and U.S. Patent No. 5,214,492 (LoBianco).

#### Grouping of Claims

The claims stand or fall together.

Argument

A. The Rejection of Claims 12-22, 24-27, 30, 31, 34, and 35 under 35 U.S.C. §103(a)

In the Final Office Action of April 20, 2004, the Examiner rejected Claims 12-22, 24-27, 30, 31, 34, and 35 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,035,476 (Ellis) in view of U.S. Patent No. 5,681,987 (Gamble). Applicant respectfully submits that the rejections should be reversed.

1. The references cited by the Examiner, considered individually and collectively, do not contain sufficient teaching, suggestion, or motivation to combine/modify the references to create the present invention as recited in Claim 12.

As stated in MPEP § 2143, there are three requirements to establish a *prima facie* case of obviousness.

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

“Therefore, an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue....To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that would create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the

cited prior art reference for combination in the manner claimed.” *In re Rouffet*, 47 USPQ2d 1453, 1457-1458 (1998).

“When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references and the teachings of the references can be combined only if there is some suggestion or incentive to do so.” *In Re Lee*, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002), citing *In re Fine*. “Hence, elements of separate patents cannot be combined when there is no suggestion of such combination in those patents.” *Panduit Corp. v. Dennison Manufacturing Co.*, 1 U.S.P.Q.2d 1593 (Fed. Cir. 1987). “Additionally, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.” *In re Mills* 16 USPQ2d 1430. “Thus, the question of motivation to combine references is material to patentability and cannot be resolved on subjective belief and unknown authority.” *In Re Lee, supra*. “Moreover, deficiencies of the cited references cannot be remedied by general conclusions about what is ‘basic knowledge,’ or ‘common sense.’ *Id.* Indeed, to imbue one of ordinary skill in the art with knowledge of the invention ... when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.” *Id.*; *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 U.S.P.Q. 303 (Fed. Cir. 1983).

In the present case, none of the prior art references cited by the Examiner contain an explicit or implicit teaching, suggestion or motivation to create the subject invention and none

teach, suggest, or motivate one to combine/modify their respective teachings with others to create the subject invention.

The Examiner states that Ellis does not disclose a key element of Claim 12, namely, an alignable light source, but asserts that it would be obvious to apply an adjustable light, as taught by Gamble, to Ellis. In accordance with the first *prima facie* requirement, the references themselves must suggest a reason to either modify a reference, or the knowledge generally must provide a motivation to modify the reference in such a way as to make the claimed invention obvious.

Applicant respectfully submits that the rejection is based upon impermissible hindsight. Applicant submits that, based on hindsight, the Examiner has dismembered the structure of the Applicant's invention, looked for citations showing the critical components, and recombined the components, without any teaching or suggestion in the references to do so.

Ellis' invention is not directed toward the problem of aligning a microscope. Ellis states in column 1, lines 49-52: "An object of this invention is to provide a confocal laser scanning transmission microscope which easily can provide an image of a transmitted light and includes a small number of optical components." Ellis includes only a single, tangential reference to alignment in col. 1, lines 30-38: "But in the conventional microscope, a number of optical components are required to form a confocal arrangement. And a drawback of this microscope is that the optical system for guiding a transmitted light again to the deflecting element is complicated, and the microscope is accordingly large-sized. The microscope includes such a number of optical components that it is difficult to adjust their alignment." This reference is in

the “Background of the Invention” and contains no suggestion regarding movement of a light source for alignment. Ellis is so unappreciative of alignment that he makes no mention at all to alignment in the claims or the “Description of the Preferred Embodiment.” Specifically, Ellis is silent regarding optical reference points, beam paths, and adjusting a light source. Therefore, at most, Ellis teaches the prior art method of manipulating individual optical components *ad naseum* to align a confocal microscope. This prior art method is the very problem that the present invention is solving.

The Examiner states that the use of an adjustable light source (in Ellis) would clearly have advantages over a light source which is not adjustable, one such advantage obviously being the ability to align the source with the rest of the optical components. There is no motivation, suggestion, or teaching in Ellis to pursue an alignment means or to address the light source. Therefore, there is no motivation, suggestion, or teaching in Ellis to make the light source adjustable as an alignment means. Hence, Ellis would not recognize any advantage regarding an adjustable light source. The advantage of an adjustable light source only becomes apparent in the context of the present invention, that is, by applying impermissible hindsight.

Conventional microscopes typically do not utilize point light sources and in the absence of such a point light source, alignment by moving the light source is not possible. That is, movement of a broad light field cannot be used for alignment of components in the field.

Thus, Ellis is not solving the problem of aligning a microscope. Rather, he is seeking to reduce the number of parts in a microscope. In fact, making a light source adjustable, as shown



in Gamble, would exacerbate the problem Ellis is solving, since Gamble's light arrangement would increase the parts count in the microscope.

Gamble does not disclose a confocal microscope and is not solving the problem of aligning a microscope either. Col. 3, lines 35-43: "Briefly, and in general terms, the present invention provides for a scanning force microscope with an oscillating cantilever probe, and a resonance contact method for using the microscope which allows high speed scanning of surface contours of a specimen for producing an image of the specimen surface contours. The invention also provides for reduction of noise in specimen images due to tip-surface interaction and acoustic noise, which is useful for improved resolution from both high and low speed scans." The only mention regarding movement of the light source is col. 7, lines 13 and 14: "Adjustment screws 80 may be provided for adjusting the alignment and aiming of the laser light source..." No mention is made regarding alignment of the light source with respect to points in the microscope. In fact, Gamble contains no teaching regarding any type of alignment.

It is a cornerstone of obviousness analysis that the prior art reference has the same purpose (solve the same problem) as the claimed invention. Since neither Ellis nor Gamble are solving the same problem as the present invention, neither Ellis nor Gamble can be said to suggest a modification that points to the claimed invention's use of an adjustable point light source for alignment of a confocal microscope.

Therefore, regarding the first *prima facie* requirement, Applicant respectfully submits that none of the references cited by the Examiner, considered individually and collectively,

contain sufficient, teaching, suggestion or motivation to combine or modify their teachings with those of others to create the subject invention.

2. One having skill in the art would not have been led to, or motivated to select the references cited by the Examiner for combination to create the subject invention as recited in Claim 12.

The Examiner must also explain the reasons one of ordinary skill in the art would have been motivated to select the references and combine them to render the claimed invention obvious. *In Re Lee*, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002); *In re Rouffet*, 47 U.S.P.Q.2d 1453.

Applicant respectfully submits that one having skill in the art would not have been led, or motivated, to select the references for combination as suggested by the Examiner. As noted *supra*, Ellis is concerned with reducing the number of components in a confocal microscope. Ellis has no reason to look to Gamble's adjustable light source in a resonance contact scanning force microscope to solve his problem. In fact, as noted *supra*, Gamble's adjustable light source would add components in the form of adjustment screws. Further, Gamble's resonance contact scanning force microscope is completely different in structure and function than the microscope of Ellis, and therefore, is not analogous to this microscope. Thus, even if Ellis were interested in alignment of the light source, there is no motivation for Ellis to look to a nonanalogous system, such as Gamble's, which does not even address alignment.

As noted *supra*, Gamble is concerned with high speed scanning of surface contours of a specimen and reduction of noise in specimen images due to tip-surface interaction and acoustic noise. Thus, Gamble has no reason to look to Ellis' confocal microscope to solve his problem. In short, Ellis and Gamble are addressing totally unrelated problems associated with very

different systems. Therefore, regarding the second *prima facie* requirement, there is no reasonable expectation of success regarding the combination of Ellis and Gamble.

3. The prior art references cited by the Examiner do not teach or suggest all the claim limitations recited in Claim 12.

Claim 12 recites, "... a detection stop (12) defining a first optical reference point and a focus of the light source defining a second optical reference point wherein an entire beam path is defined by said first optical reference point and said second optical reference..." Ellis does not disclose a detection stop, optical reference points, or a focus of the light source. The above element does not make sense in Gamble's microscope. Therefore, Gamble cannot and does not disclose a detection stop, optical reference points, or a focus of the light source. Thus, neither Ellis nor Gamble discloses the above Claim 12 element.

Claim 12 recites, "...said light source is alignable with respect to said first and second reference points..." Ellis does not disclose that the light source 51 can be adjusted in any manner to align the components of the microscope. The Examiner has cited Gamble as teaching an adjustable light source. Gamble col. 7, lines 13-15 states: "Adjustment screws 80 may be provided for adjusting the alignment and aiming of the laser light source, mounted in threaded access ports 81 provided in body." However, Gamble does not disclose the first and second reference points or adjustment of the light source with respect to reference points. Further, there is no suggestion or motivation in Gamble regarding a light source alignable with respect to two reference points. Thus, neither Ellis nor Gamble discloses the Claim 12 element of "...said light source is alignable with respect to said first and second reference points..."

Therefore, regarding the third *prima facie* requirement, the prior art references cited by the Examiner do not teach or suggest all the claim limitations recited in Claim 12.

For the reasons set forth above, Applicant respectfully submits that, with respect to Claim 12, Ellis and Gamble fails to satisfy each of the three requirements for establishing a *prima facie* case of obviousness in accordance with MPEP § 2143. Therefore, Claim 12 is patentable over Ellis in view of Gamble and Applicant respectfully requests that the rejection be withdrawn. Claims 13-18, 20-22, 24-27, 34, and 35 depend from Claim 12, which is patentable in light of the cited references. Thus, Claims 13-18, 20-22, 24-27, 34, and 35 are also patentable in light of the cited references.

#### 4. Examiner's rejection of Claim 30

Claim 30 recites: "...a detection stop (12) defining a first optical reference plane and an illumination stop (3) defining a second reference plane wherein an entire beam path is defined as perpendicular to said first optical reference plane and said second optical reference plane and through a center of said detection stop..." Applicant submits the preceding element of Claim 30 is analogous to the Claim 12 element of: "...a detection stop (12) defining a first optical reference point and a focus of the light source defining a second optical reference point wherein an entire beam path is defined by said first optical reference point and said second optical reference point..." Specifically, the alignment of a beam path with respect to first and second optical reference points (Claim 12) is analogous to the alignment of a beam path with respect to first and second reference planes (Claim 30). Further, in the same manner that Ellis and Gamble fail to teach, suggest, or motivate the elements of Claim 12 regarding reference points, Applicant

submits that Ellis and Gamble fail to teach, suggest, or motivate the above element of Claim 30. Thus, for the sake of brevity, Applicant will not repeat the arguments for Claim 12 with respect to Claim 30.

For the reasons set forth above, Applicant respectfully submits that, with respect to Claim 30, Ellis and Gamble fail to satisfy the three requirements for establishing a *prima facie* case of obviousness in accordance with MPEP § 2143. Therefore, Claim 30 is patentable over Ellis in view of Gamble and Applicant respectfully requests that the rejection be withdrawn. Claim 31 depends from Claim 30, which is patentable in light of the cited references. Thus, Claim 31 is also patentable in light of the cited references.

5. Examiner's rejection of Claim 23

Claim 23 was erroneously grouped with Claims 1-11, 28, 29, 32, and 33 in the last official action. However, Claim 23 is dependent from Claim 12 and therefore, should be grouped with Claims 12-22, 24-27, 30, 31, 34, and 35. Since Claim 12 is patentable over the cited references, Claim 23 is also patentable over the cited references.

B. The Rejection of Claims 1-11, 23, 28, 29, 32, and 33 under 35 U.S.C. §103(a)

In the Final Office Action of April 20, 2004, the Examiner rejected Claims 1-11, 23, 28, 29, 32, and 33 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,035,476 (Ellis) in view of U.S. Patent No. 5,681,987 (Gamble) and U.S. Patent No. 5,214,492 (LoBianco). Applicant respectfully submits that the rejections should be reversed.

1. Examiner's rejection of Claim 1

Claim 1 recites: "... a) providing a center of the detection stop (12) as a first optical reference point; b) providing a focus of the light source as a second optical reference point wherein an entire beam path is defined by said first optical reference point and said second optical reference point..." This element is essentially the same as the Claim 12 element: "... a detection stop (12) defining a first optical reference point and a focus of the light source defining a second optical reference point wherein an entire beam path is defined by said first optical reference point and said second optical reference..." Therefore, Applicant submits that the arguments regarding the above element in Claim 12 are applicable to Claim 1.

Claim 1 recites: "...carrying out an iterative alignment of the light source until the entire beam path is aligned with respect to said first optical reference point and said second optical reference point" This element is essentially the same as the Claim 12 element: "...said light source is alignable with respect to said first and second reference points..." with the addition of a further limitation regarding an iterative alignment. Therefore, Applicant submits that the arguments regarding the above element in Claim 12 are applicable to Claim 1. Therefore, regarding Claim 1, Ellis and Gamble fail to satisfy the requirements for establishing a *prima facie* case of obviousness in accordance with MPEP § 2143.

The Examiner cited LoBianco in Section 3 of the April 16, 2004 Office Action with respect to an iterative method for adjusting an emitted light beam. The Abstract of LoBianco states: "An apparatus having a set of apertures of selected diameters, each aperture being positioned in a multiaperture assembly that can be move to bring selectively each of these

apertures into a path of a beam.” LoBianco does not disclose a microscope, alignment of microscope components, or an alignable light source.

Regarding the first *prima facie* requirement, LoBianco is not solving a problem regarding alignment of a confocal microscope and can not be said to suggest a modification that points to the claimed invention’s use of an adjustable point light source for alignment of a confocal microscope with respect to reference points. Therefore, there is no suggestion or motivation in LoBianco, or in the knowledge generally available to one of ordinary skill in the art, to modify one of Ellis, Gamble, or LoBianco, or to combine reference teachings.

Regarding the second *prima facie* requirement and the selection of references, Ellis is concerned with reducing the number of components in a confocal microscope and Gamble is concerned with high speed scanning of surface contours of a specimen and reduction of noise in specimen images. Neither Ellis nor Gamble has any reason to look to LoBianco to solve their problems. LoBianco has no reason to look to Ellis or Gamble regarding his problem of moving apertures to bring them into a path of a beam. Therefore, there is no reasonable expectation of success regarding the combination of Ellis, Gamble, and LoBianco.

Regarding the third *prima facie* requirement, LoBianco does not teach or suggest the Claim 1 limitations regarding a detection stop, optical reference points, a beam path defined with respect to the reference points, or a light source alignable with respect to the beam path.

Hence, LoBianco does not cure the defects of Ellis and Gamble. Therefore, Applicant respectfully submits that, with respect to Claim 1, Ellis in view of Gamble and further in view of LoBianco fails to satisfy the requirements for establishing a *prima facie* case of obviousness in

accordance with MPEP § 2143. Therefore, Claim 1 is patentable over Ellis in view of Gamble and further in view of LoBianco and Applicant respectfully requests that the rejection be withdrawn. Claims 2, 3, 5, 6, 8-11, 32, and 33 depend from Claim 1, which is patentable in light of the cited references. Thus, Claims 2, 3, 5, 6, 8-11, 32, and 33 are also patentable in light of the cited references.

## 2. Examiner's rejection of Claim 28

Claim 28 recites: "...a) providing the plane of the detection stop (12) as a first optical reference plane; b) providing the plane of the illumination stop (3) as a second reference plane wherein an entire beam path is defined as perpendicular to said first optical reference plane and said second optical reference plane and through a center of said detection stop ..." This element is essentially the same as the Claim 30 element: "...a detection stop (12) defining a first optical reference plane and an illumination stop (3) defining a second reference plane wherein an entire beam path is defined as perpendicular to said first optical reference plane and said second optical reference plane and through a center of said detection stop..." Therefore, Applicant submits that the arguments regarding Claim 30 are applicable to the above limitation of Claim 28.

Claim 28 recites: "...carrying out an iterative alignment by adjusting the configuration of the light source until the entire beam path is perpendicular to said first optical reference plane and said second optical reference plane and through a center of said detection stop." This element is similar to the Claim 12 element: "...said light source is alignable with respect to said first and second reference points, and the light source is displaceable laterally for alignment..." and adds a further limitation regarding an iterative alignment. Specifically, the alignment of a



beam path with respect to first and second optical reference points (Claim 12) is analogous to the alignment of a beam path with respect to first and second reference planes (Claim 28). Therefore, Applicant submits that the arguments regarding the above element in Claim 12 are applicable to the preceding element of Claim 28.

Regarding the first *prima facie* requirement, LoBianco is not solving a problem regarding alignment of a confocal microscope and can not be said to suggest a modification that points to the claimed invention's use of an adjustable point light source for alignment of a confocal microscope with respect to reference planes. Therefore, there is no suggestion or motivation in LoBianco, or in the knowledge generally available to one of ordinary skill in the art, to modify one of Ellis, Gamble, or LoBianco, or to combine reference teachings.

Regarding the second *prima facie* requirement and the selection of references, Ellis is concerned with reducing the number of components in a confocal microscope and Gamble is concerned with high speed scanning of surface contours of a specimen and reduction of noise in specimen images. Neither Ellis nor Gamble has any reason to look to LoBianco to solve their problems. LoBianco has no reason to look to Ellis or Gamble regarding his problem of moving apertures to bring them into a path of a beam. Therefore, there is no reasonable expectation of success regarding the combination of Ellis, Gamble, and LoBianco.

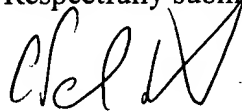
Regarding the third *prima facie* requirement, LoBianco does not teach or suggest the Claim 28 limitations regarding a detection stop, reference planes, a beam path defined with respect to the reference planes, or a light source alignable with respect to the beam path.

Hence, LoBianco does not cure the defects of Ellis and Gamble. Therefore, Applicant respectfully submits that, with respect to Claim 28, Ellis in view of Gamble and further in view of LoBianco fails to satisfy the requirements for establishing a *prima facie* case of obviousness in accordance with MPEP § 2143. Therefore, Claim 28 is patentable over Ellis in view of Gamble and further in view of LoBianco and Applicant respectfully requests that the rejection be withdrawn. Claims 4 and 29 depend from Claim 28, which is patentable in light of the cited references. Thus, Claims 4 and 29 are also patentable in light of the cited references.

Conclusion

In view of the foregoing, it is clear that the pending claims are patentable over the cited prior art. Reversal of the Examiner and allowance of all claims are therefore respectfully requested.

Respectfully submitted,



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CPM  
Dated: August 9, 2004

Appendix

Reprinted below are the claims on appeal:

1. A method for aligning the optical beam path of a microscope, having a light source (1), a microscope optical system, a detection stop (12), and a detection device (13), wherein the method comprises the steps of:
  - a) providing a center of the detection stop (12) as a first optical reference point;
  - b) providing a focus of the light source as a second optical reference point wherein an entire beam path is defined by said first optical reference point and said second optical reference point; and,
  - c) carrying out an iterative alignment of the light source until the entire beam path is aligned with respect to said first optical reference point and said second optical reference point, so that the light precisely strikes the detection stop.
2. The method as defined in Claim 1, characterized in that the light source (1) is a point light source.
3. The method as defined in Claim 1, characterized in that the reference points are located in planes conjugated with one another.
4. The method as defined in Claim 28, characterized in that the planes are Fourier planes.

5. The method as defined in Claim 1, characterized in that the second reference point is at a center of an objective pupil (9).
6. The method as defined in Claim 1, characterized in that all optical elements are aligned with respect to the reference points.
7. (cancelled)
8. The method as defined in Claim 1, characterized in that the light source is displaced laterally for alignment.
9. The method as defined in Claim 1, characterized in that the plane in which the light source lies is a plane corresponding to the plane of the detection stop (12).
10. The method as defined in Claim 8, characterized in that the lateral displacement of the light source is accomplished by way of a lateral displacement of the illumination stop (3).
11. The method as defined in Claim 1, characterized in that the microscope is a confocal microscope.

12. A microscope assemblage, having a light source (1), a microscope optical system, a detection device (13), a detection stop (12) defining a first optical reference point and a focus of the light source defining a second optical reference point wherein an entire beam path is defined by said first optical reference point and said second optical reference point, said light source is alignable with respect to said first and second reference points, and the light source is displaceable laterally for alignment.

13. The microscope assemblage as defined in Claim 12, characterized in that the light source (1) is a point light source.

14. The microscope assemblage as defined in Claim 12, characterized in that the light source (1) is a laser resonator defining a resonator light bundle.

15. The microscope assemblage as defined in Claim 14, characterized in that the focus of the resonator light bundle of the laser resonator in the laser resonator serves as an intra-laser point light source (19).

16. The microscope assemblage as defined in Claim 13, characterized in that the point light source is constituted by an extra-laser focus (18).

17. The microscope assemblage as defined in Claim 16, characterized in that the extra-laser focus (18) is generated by focusing the illuminating light with a lens (2) or a hollow mirror.

18. The microscope assemblage as defined in Claim 12, characterized in that the reference points are located in planes conjugated with one another.

19. (cancelled)

20. The microscope assemblage as defined in Claim 12, characterized in that the second optical reference point is at a center of an objective pupil (9).

21. The method as defined in Claim 12, characterized in that all optical elements are alignable with respect to the reference points.

22. The microscope assemblage as defined in Claim 13, characterized in that the point light source is displaceable laterally for alignment.

23. The microscope assemblage as defined in Claim 22, characterized in that the lateral displacement of the point light source is accomplished by way of a lateral displacement of an illumination stop (3).

24. The microscope assemblage as defined in Claim 16, characterized in that in the extra-laser focus (18) of the point light source defining the illuminating light beam is laterally displaced by lateral displacement of the laser together with a focusing lens.

25. The microscope assemblage as defined in Claim 24, characterized in that the extra-laser focus (18) defining the illuminating light beam is laterally displaced by rotation of the laser about the pupil of the focusing lens.

26. The microscope assemblage as defined in Claim 13, characterized in that for alignment, the illuminating light beam is rotated or tilted about the location of the point light source.

27. The microscope assemblage as defined in Claim 13, characterized in that the illuminating light beam is rotated or tilted about an illumination stop (3).

28. A method for aligning the optical beam path of a microscope, having a light source (1), a microscope optical system, a detection stop (12), a detection device (13), and an illumination stop (3), wherein the method comprises the steps of:

- a) providing the plane of the detection stop (12) as a first optical reference plane;
- b) providing the plane of the illumination stop (3) as a second reference plane

wherein an entire beam path is defined as perpendicular to said first optical reference plane and said second optical reference plane and through a center of said detection stop; and,

c) carrying out an iterative alignment by adjusting the configuration of the light source until the entire beam path is perpendicular to said first optical reference plane and said second optical reference plane and through a center of said detection stop.

29. The method as defined in Claim 28, characterized in that all optical elements are aligned with respect to the reference planes.

30. A microscope assemblage, having a light source (1), a microscope optical system, a detection device (13), a detection stop (12) defining a first optical reference plane and an illumination stop (3) defining a second reference plane wherein an entire beam path is defined as perpendicular to said first optical reference plane and said second optical reference plane and through a center of said detection stop, and said light source is operatively arranged to be displaceable laterally for alignment.

31. The apparatus as defined in Claim 30, characterized in that all optical elements are alignable with respect to the reference planes.

32. The method recited in Claim 1 wherein said light source is adjusted in configuration by a lateral movement.



33. The method recited in Claim 1 wherein said light source is adjusted in configuration by a rotational movement.
34. The apparatus recited in Claim 12 wherein said light source is operatively arranged to be adjusted in configuration by a lateral movement.
35. The apparatus recited in Claim 12 wherein said light source is operatively arranged to be adjusted in configuration by a rotational movement.